REMARKS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

Claims 9-21 are pending. Claim 21 is amended to correct dependency. No new matter is introduced.

In the outstanding Office Action, Claim 21 was objected to; Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the background in view of Richley (US Patent No. 7,412,007); Claims 10-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the background in view of Richley and Kaczynski (US Patent Application Publication No. 2007/0111684); Claims 12-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the background in view of Richley, Shohara (US Patent Application Publication No. 2005/0078743) and Wilhelmsson (US Patent Application Publication No. 2007/0211831); Claims 14-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the background in view of Modafferi (US Patent No. 4,771,466); Claims 19-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Richley, Shohara, Wilhelmsson and Modafferi; and Claim 21 was objected to for depending from a rejected base claim, but otherwise indicated as allowable.

The indication of allowable subject matter is gratefully acknowledged. For the reasons below, all claims are believed to be in condition for allowance.

Initially, Claim 21 is amended to depend from Claim 9. As such, it is respectfully requested that the objection to Claim 21 be withdrawn.

The rejection of Claim 9 as being unpatentable over the background in view of Richley is respectfully traversed. Claim 9 is directed to a wide-band amplifier that includes:

> an input terminal configured to receive an input voltage;

> an output terminal configured to provide an amplified output voltage;
>
> an amplification device connected in series between the input terminal and the output terminal, an output of the amplification device being directly connected to the output terminal;
>
> an LC parallel resonant circuit connected between the output terminal and a ground terminal in parallel to the amplification device; and
>
> an LCR series resonant circuit connected between the output terminal and the ground terminal in parallel to the amplification device and the LC parallel resonant circuit.

Thus, Claim 9 defines a wide-band amplifier whose output is directly tied to an amplification device without any intervening, series passive elements. As such, the voltage output of the amplification device is the same voltage output at the output terminal of the wide-band amplifier device because there is no passive elements connected in series between the amplification device and the output terminal to cause a voltage drop. It is believed that no reference cited suggests or discloses this feature.

For example, Richley describes a singly terminated filter network (300) that includes a transistor (12) whose output, for example its source, is connected to a load resistor (19) through a series capacitor (15), a series inductor (16).[1] The filter (300) also includes a parallel capacitor (17) and a parallel inductor (18) connected in parallel with the load resistor (19).[2] In operation, Richley describes that the gate of the transistor (12) is pulsed to generate a transistor output pulse that is stored in the inductor (14) and the capacitor (13). When the transistor is off, the stored energy in the inductor (14) and the resistor (13) is then passed through the resonant filter formed by series capacitor (15), series inductor (16), parallel capacitor (17) and parallel inductor (18) to the load resistor (19).[3] Richley also describes that

[1] Richley at column 5, line 64, - column 6, line 21.
[2] See, for example, Fig. 3 of Richley.
[3] Richley at column 4, lines 40-65.

the filter (30) is designed to provide a Chebyshev low-pass filter response, and that the passive components are scaled accordingly.[4]

However, Richley does not describe that the output of the transistor (12) is directly connected to the load resistor (19) so that the output voltage experienced by the load resistor (19) is the same as the output voltage of the transistor (12). Instead, Richley clearly illustrates that there are two components in series between the output of the transistor (12) and the load resistor (19): the series capacitor (15) and the series inductor (16).[5] Further, Richley describes that these series components are necessary in order to generate the appropriate Chebyshev low-pass filter response.[6] Thus, it is unclear how the background can be combined with Richley without fundamentally changing the principle of operation of Richley since a key aspect of the circuit in Richley is the resonance between the series capacitor (15) and the series inductor (16) with the parallel capacitor (17) and the parallel inductor (18). Indeed, any combination of Richley with the background would require removal of the series components and destroy this resonance effect. In this regard,

> If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Thus, the proposed combination would require significant modifications to the resonant circuit of Richley by removing the series components between the transistor (12) and the load resistor (19), and as such would fundamentally change the principle of operation of Richley as the resulting circuit would no longer be a resonant filter implementing a Chebyshev response. Thus, the proposed combination of Richley with the background is improper and as such the outstanding Office Action fails to establish a *prima facie* case of

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[4] Richley at column 4, lines 19-27.
[5] See Fig. 3 of Richley.
[6] Richley at column 4, lines 20-27.

obviousness relative to Claim 9. Accordingly, it is respectfully requested that the rejection of Claim 9 under 35 U.S.C. § 103(a) be withdrawn.

With regard to the rejection of Claims 14-18 as being unpatentable over the background in view of Modafferi, this rejection is also respectfully traversed. Claim 14 is directed to a wide-band amplifier circuit and recites:

> an input terminal configured to receive an input voltage;
>
> an output terminal configured to provide an output voltage;
>
> an amplification device connected in series between the input terminal and the output terminal, and output of the amplification device being directly connected to the output terminal; and
>
> an analog band-pass filter connected between the output terminal and a ground terminal in parallel to the amplification device, the analog band-pass filter having a plurality of poles provided on a left side of an s-plane and a plurality of zeros arranged between the poles, at least two zeros being arranged at locations other than an origin of the s-plane.

Thus, Claim 14 defines that there is a direct connection between the output of the amplification device and the output of the wide-band amplifier without any intervening series components.

In contrast, Modafferi describes a loudspeaker crossover system that approximates an ideal all-pass filter transfer function.[7] Modafferi describes selecting topologies and components to implement a pole-zero response corresponding to the idealized all-pass filter.[8]

However, Modafferi does not describe that the amplified output is directly connected to the loudspeaker loads (R) without any intervening series components. Instead, Modafferi clearly illustrates series components between the input (12, G) and the load (R) of the crossover system, such as capacitors (C_1 and C_2).[9] Modafferi describes that these circuit

[7] Modafferi at column 5, lines 1-5.
[8] Modafferi at column 5, lines 50-57; see also Figs. 4, 5, 6, 12 and 13.
[9] See, for example, Figs. 4A-4B of Modafferi.

components are necessary to generate the desired pole-zero response.[10] Thus, any combination of the background with Modafferi would necessarily require removal of C_1 and C_2, which are described by Modafferi as necessary to generate the correct response.[11] As noted above, any proposed modification or combination that would change the principle of operation a reference is insufficient to establish a *prima facie* case of obviousness.[12] Therefore, the proposed combination of the background in Modafferi is improper as it would fundamentally change the principle of operation of the circuit in Modafferi by removing the series capacitors (C_1, C_2) thereby completely changing the pole-zero response of this circuit in the complex frequency plane. Accordingly, it is submitted that the combination of the background and Modafferi proposed in the outstanding Office Action is improper, and that the outstanding Office Action fails to make a proper *prima facie* case of obviousness with regard to Claims 14-18. Accordingly, it is submitted that Claims 14-18 are in condition for allowance and it respectfully requested that the rejection of Claims 14-18 under 35 U.S.C. § 103(a) be withdrawn.

As all other rejections of record rely upon Richley and/or Modafferi for describing the above-distinguished features, and the above-distinguished features are not disclosed or suggested by Richley or Modafferi alone, in combination or in combination with any other art of record, it is respectfully submitted that a *prima facie* case of obviousness cannot be maintained. Accordingly, it is respectfully requested that the rejection of Claims 10-13 and 19-20 under 35 U.S.C. § 103(a) be withdrawn.

[10] Modafferi a column 9, lines 5-15; see also Fig. 4C.
[11] Id.
[12] See *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 9-21 is earnestly solicited.

Respectfully submitted,

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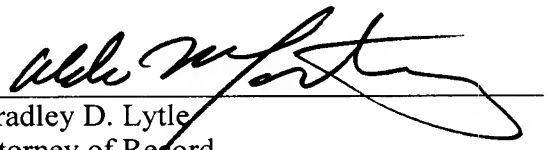

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